

AIWA

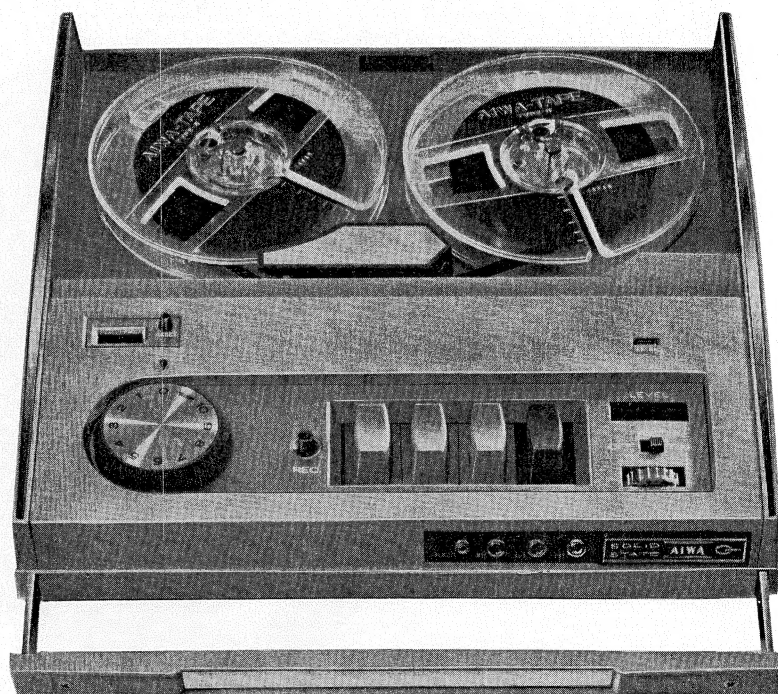
TRANSISTOR TAPE RECORDER

MODEL **TP-713**

MODEL **TP-721**

[SERVICE MANUAL]

 **AIWA CO., LTD.**
TOKYO JAPAN



SPECIFICATIONS

Type	Output :	TP-713	1000mW Max. 700mW Undistorted
TP-713 & TP-713H : Capstan-drive, Dual-track monoural, 2 speeds		TP-713H	1000mW Max. 700mW Undistorted
TP-721H : Capstan-drive, 4-track monoural, 2 speeds		TP-721H	1500mW Max. 1000mW Undistorted
Amplifier : 7 transistors, 8 diodes, 1 thermistor	Speaker :		2-1/2"×4" (70×100mm) PM.D. Oval
Tape speed &	VU meter :		Built-in w/battery level indicator
Recording time : TP-713 & TP-713H 1-7/8"/sec (4.75cm/sec) ...2 hrs 3-3/4"/sec (9.5cm/sec) ...1 hr TP-721H 1-7/8"/sec (4.75cm/sec) ...4 hrs 3-3/4"/sec (9.5cm/sec) ...2 hrs [total rounds of standard 600ft. tape]	Power source :		DC, 6V, Size "D", Eveready No. 1050 or E 95 (Alkaline) 1.5V×4 AC 110-125V & 220-240V 50-60cycles (Hz) Switchable
Recording system : AC bias, automatic recording level control (AVC) and normal	Dimensions :		11-7/8" (width)×12" (length)×3" (thickness) (300×308×75mm)
	Weight :		9 lbs. (4kg) w/batteries
	Microphone :		Dynamic microphone w/stop start switch
	Earphone :		Magnetic earphone

THIS SERVICE MANUAL IS EQUALLY APPLICABLE TO THE THREE MODELS, TP-713, TP-713H & TP-721H (H type is for high voltage use).

1. DISASSEMBLY INSTRUCTIONS

1. How To Remove Back Lid (Fig. 1-1)

- (1) Remove 4 setscrews 168 by means of a plus (+) screw-driver.
- (2) Pull AC input jack 320 in the direction indicated by the arrow mark (⇒) and remove it.
- (3) Remove two setscrews 175 securing Voltage Selector Switch in place (Fig. 1-2). (Applicable to TP-713H & TP-721H only)
- (4) Take the above procedures, (1), (2) and (3) and the back lid can be readily opened. Now, find lead wire (Ⓐ, Fig. 1-4) of speaker and unsolder it for complete removal of the back lid from case.

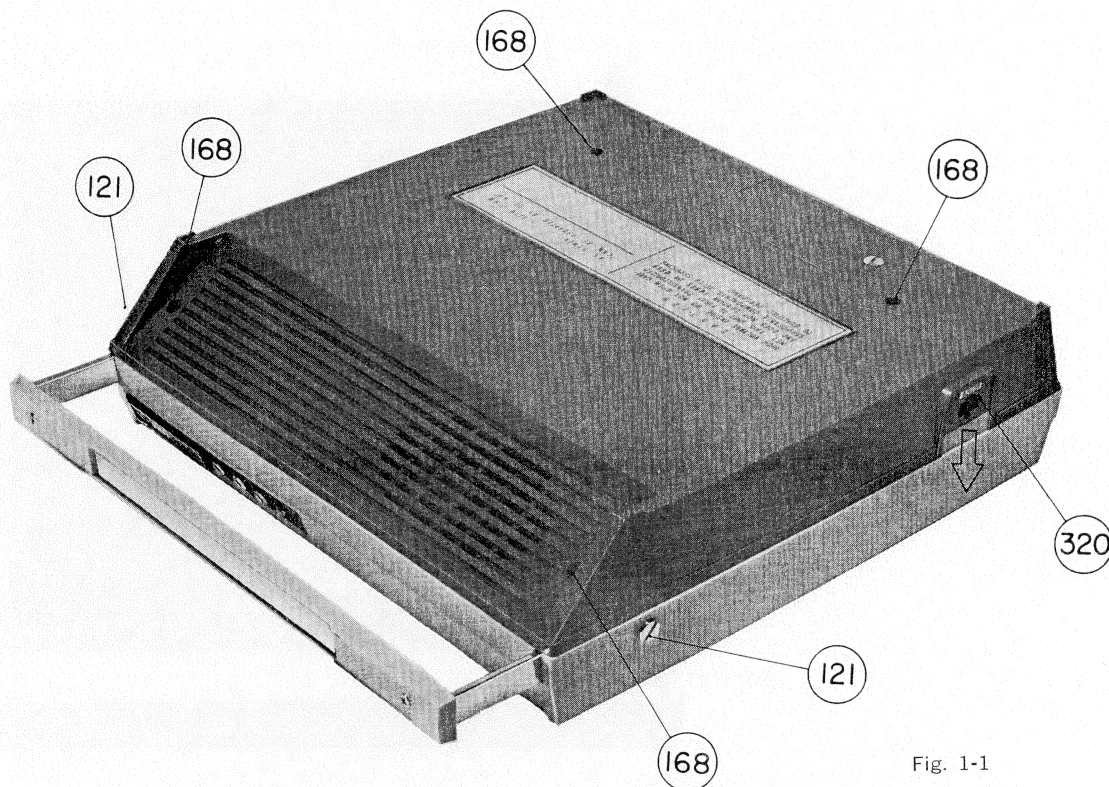


Fig. 1-1

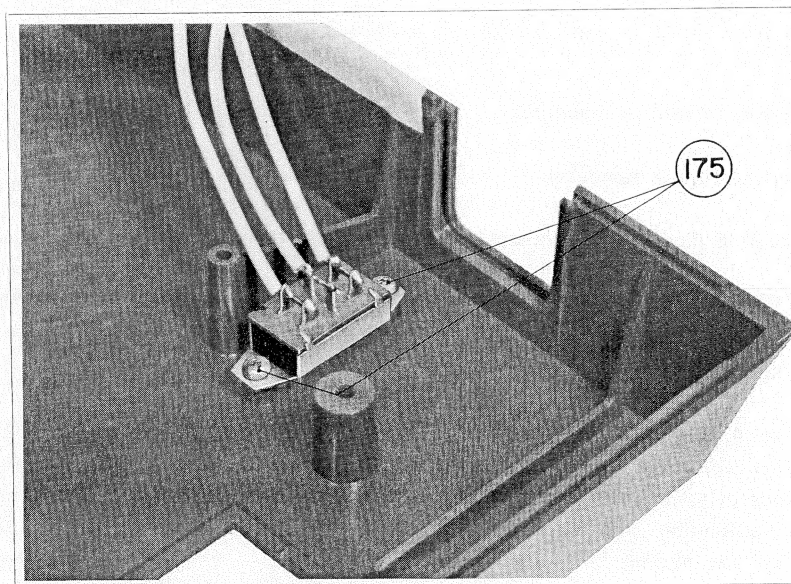


Fig. 1-2

2. How To Remove Internal Mechanism From Case

- (1) As shown by Fig. 1-3, remove Volume Control knob by means of a fine cloth or string.
- (2) Using a plus (+) screwdriver, remove setscrews 166 located under Volume Control knob.
- (3) Find on both sides of case two setscrews 121 (Fig. 1-1) securing the carrying handle and remove them by means of a large minus (-) screwdriver.
- (4) Unsolder lead wire of battery terminal.
- (5) Remove setscrew 167 (Fig. 1-4) by means of a plus (+) screwdriver.

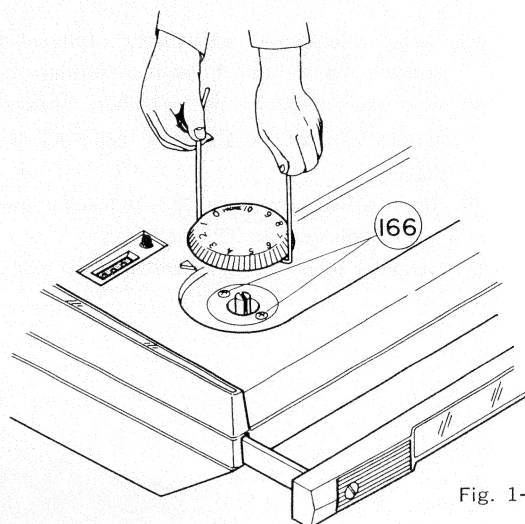


Fig. 1-3

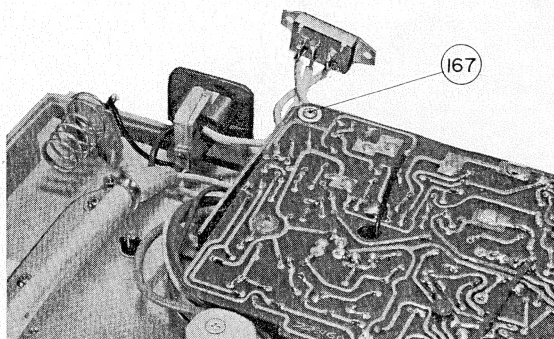


Fig. 1-4

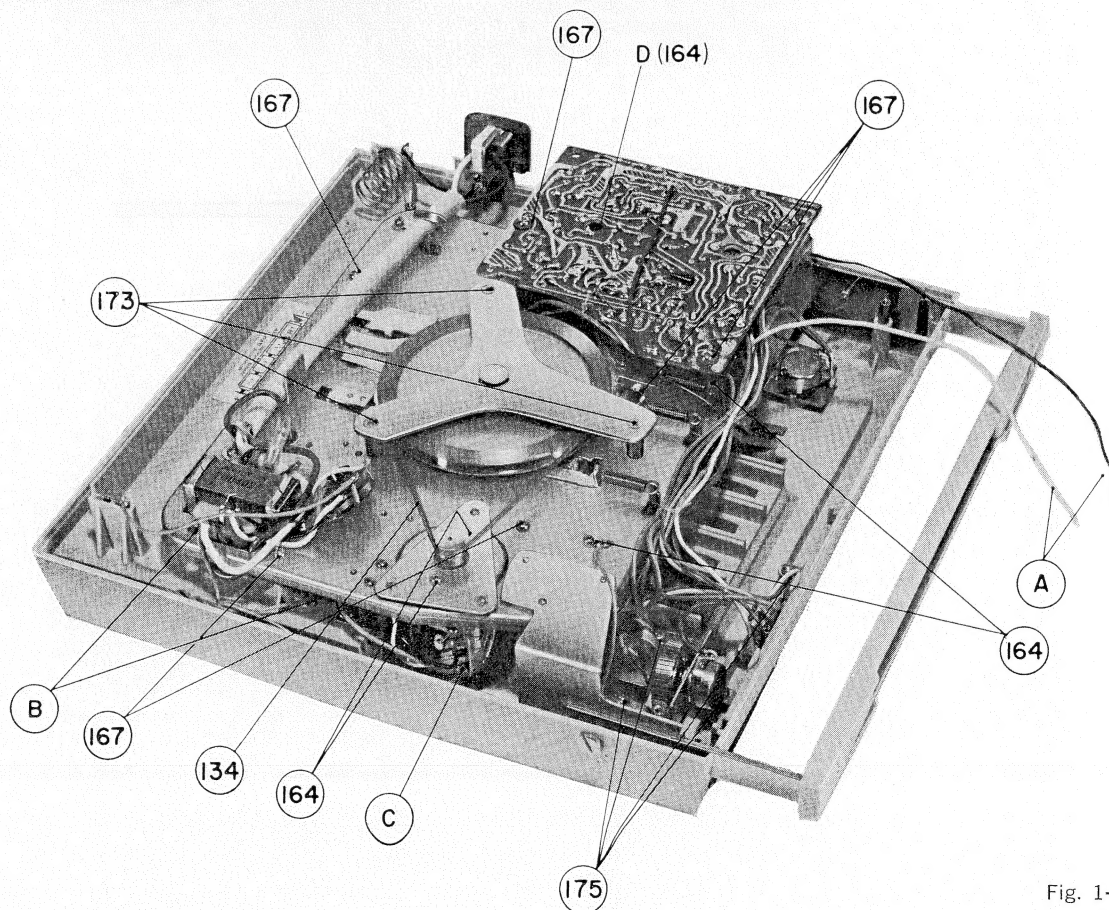


Fig. 1-4

- (6) Using a plus (+) screwdriver, remove two tapping screws 175 of Tone Control mounting plate.
- (7) Also using a plus (+) screwdriver, remove two tapping screws 175 for metal fitting securing jack holder in place.
- (8) Remove two setscrews 236 of track plate unit (Fig. 1-5). (Applicable to TP-721H only)
- (9) Unsolder lead wire Ⓑ of Neon Lamp (Fig. 1-4).

With the above procedures, the internal mechanism can be completely removed from case proper.

Note: When putting back the above for reassembly, make sure that the "claw" of Tape Counter supporter is properly engaged with case.

Fig. 1-5

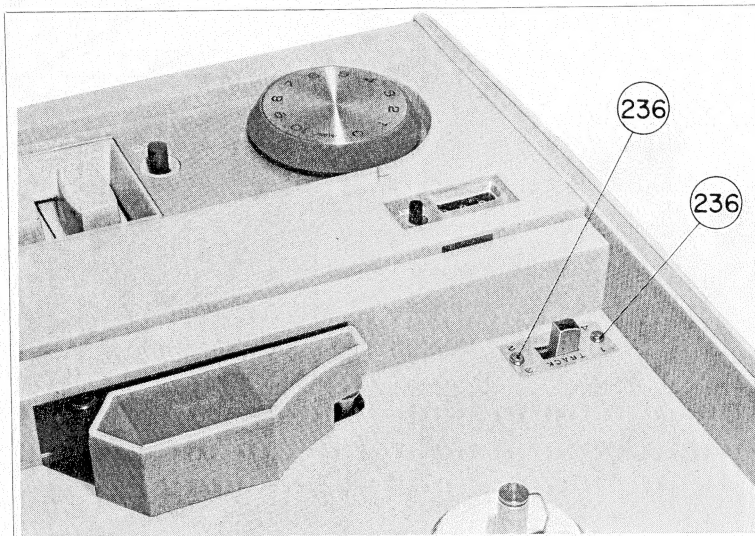
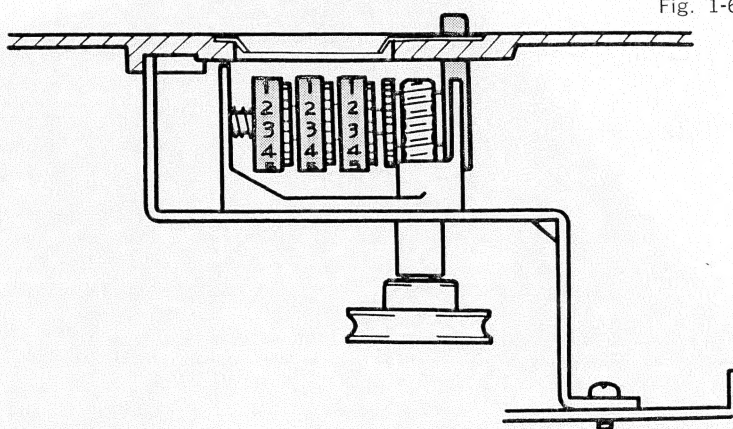


Fig. 1-6



2. HOW TO REMOVE MAIN COMPONENT UNITS

1. To Remove Motor (Fig. 1-4)

- (1) Remove main belt 134 from motor pulley.
- (2) Unsolder motor lead wire of the part ㉔.
- (3) Remove two setscrews 164 by means of a plus (+) screwdriver.

Now, the motor can be removed completely from chassis.

2. To Remove Amplifier (Fig. 1-4)

- (1) Remove setscrew 167 by means of a plus (+) screwdriver.
- (2) Insert a plus (+) screwdriver into center hole of the part ㉑ and remove setscrews 164 securing radiation plate in place by means of that screwdriver.

By taking the above steps, the amplifier becomes loosened from the chassis but can not be removed completely since it is still connected to the chassis by a number of lead wires. Nevertheless, this permits you to take a good look of the amplifier's upper side.

3. To Remove Pushbuttons

- (1) Using a plus (+) screwdriver, remove setscrew 164 (Fig. 1-4) from under the chassis. However, note that it is located under amplifier, so that the amplifier should be removed first for removal of that screw.
- (2) Remove two setscrews 164 (See Page 15 of this manual) from top side of the chassis.

Now, pushbuttons can be completely removed from the chassis.

4. To Remove Sub-chassis (Page 15, 17, This Manual)

- (1) Loosen tape guide shaft 131 and tape guide plate 133 by means of a minus (−) screwdriver.
- (2) Remove three countersunk screws 173 by means of a plus (+) screwdriver.
- (3) Now, pull sub-chassis straight upward for removal.

Cautions: a. Put back the above properly for reassembly so that "claw" of pinch-roller lever 58 should be engaged with recording switch lever 122 when reassembled.

b. Take care not to lose washer 155 used between flywheel shaft and upper shaft bearing.

5. To Remove Lower Shaft Bearing Mount

- (1) Remove countersunk screws, 173 of Fig. 1-4 by means of a plus (+) screwdriver and then pull upward this unit for removal.

6. To Remove Flywheel

- (1) After removing sub-chassis and lower shaft bearing plate, remove takeup belt 135 (Fig. 2-2) and the flywheel will be readily removed.

7. To Remove Levers

- (1) Remove flywheel and pushbuttons.
- (2) Remove main spring 93, rewinding spring 94 and F. FWD lever spring 116 (Fig. 1-4).
- (3) Remove takeup spring 97 (Fig. 2-2).
- (4) Remove 163 and 164, the two screws connecting main lever to recording switch lever.
- (5) Pull the lever toward yourself and it will be removed.

3. OPERATION

1. Selection of Tape Speed

Open upper lid and find slide switch on the right of control panel. Tape speed can be changed from 3-3/4"/sec. (9.5cm/sec.) to 1-7/8"/sec. or vice versa by means of this slide switch. This speed selection is made by switching of motor governor.

2. Recording & Playback

Depressing REC button, press FWD button. This automatically locks both REC and FWD buttons to recording position.

When REC button is depressed as above, the "hook" of recording switch spring riveted to recording switch lever comes down as indicated by the dotted line in Fig. 2-1 (a) and presses Record/Playback slide switch. With FWD button depressed, recording switch lever moves in the direction indicated by the arrow mark (⇒) while Record/Playback slide switch is slid to Recording position.

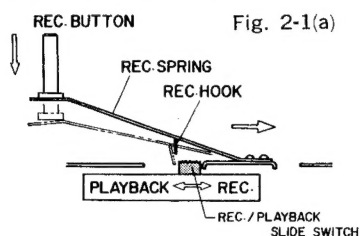


Fig. 2-1(a)

At the same time, square hole of recording switch spring becomes locked with locking plate of the chassis, making both recording switch spring and REC button remain in the depressed-down position as shown by Fig. 2-1 (b).

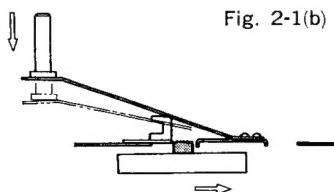


Fig. 2-1(b)

When FWD button is released from the above locked position, recording switch lever, together with main lever, is pulled back by spring and Record/Playback slide switch pushed back by the recording switch lever. This recorder is so designed that the Record/Playback slide switch may be set to Playback position without failure when the recorder is turned to Stop.

As shown by Fig. 2-1(c), the recording switch spring is not pressed in playback, so that the Record/Playback slide switch remains in playback position as indicated by the dotted line even when FWD button is locked.

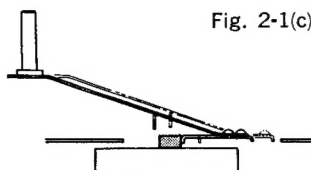


Fig. 2-1(c)

3. Remote Stop/Start Control

Remote stop/start control of FWD operation is made electrically by means of remote control switch fitted to microphone. This is a sort of remote control operation but does not work during F. FWD and RWD operations.

4. Rewinding

Depress RWD button until it is locked, and rewinding lever will move in the direction indicated by the mark (⇒) in Fig. 2-2 while rewinding roller moves toward flywheel as indicated by the mark (↘) until it is made pressed onto the notched edge of flywheel by spring. At the same time, take-up spring is made released in the direction (⇒) and rewinding finally takes place.

5. F. FWD

With F. FWD button locked (depressed), F. FWD lever moves in this (⇒) direction, pulling takeup spring. As a result, tension of take-up belt increases and F. FWD operation takes place.

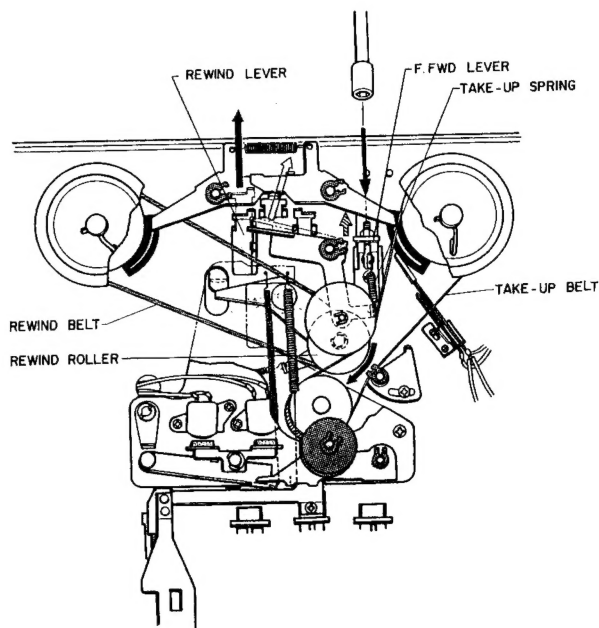


Fig. 2-2

REPAIR INSTRUCTIONS

☐ Possible cause ► Remedy

SYMPTOM	POSSIBLE CAUSE & REMEDY
Operates on neither AC nor battery power (No motor revolution)	<p>1. <input type="checkbox"/> Defective contact of remote control jack.</p> <p>► A and C of the 2.5ϕ remote control jack must be in contact with each other at B. Otherwise, the motor will not revolve. Bend A in this direction (→).</p> <p>Note: <input type="checkbox"/> (When microphone plug is inserted, A and C of the jack should become separated from each other. If not, the motor will not stop revolving even with remote control switch of microphone turned to off.</p> <p>► Bend A in this (↔) direction so that they should become separated from each other when the plug is inserted.</p>
	<p>2. <input type="checkbox"/> Defective contact of leaf switch.</p> <p>► With F. FWD, FWD or RWD button locked (depressed), A and B must be in contact with each other. If not in contact as above, loosen screws, C and D, and make adjustment. Note that A and B should be separate from each other in Stop position.</p>
	<p>3. <input type="checkbox"/> Lead wire of motor broken.</p> <p>► Solder the lead wire.</p>
	<p>4. <input type="checkbox"/> Defective motor.</p> <p>► Replace motor.</p>
Operates on neither AC nor battery power (Motor revolves)	<p>1. <input type="checkbox"/> Main belt out of place or broken.</p> <p>► If the main belt has slipped out of flywheel motor pulley, mount it back properly as shown by the illustration.</p>
	<p>2. <input type="checkbox"/> Abnormal slackening of main belt.</p> <p>► Replace the belt.</p>

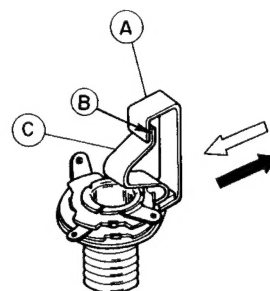


Fig. 2-3

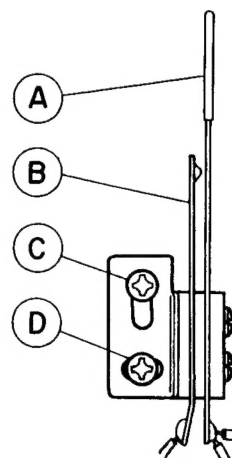


Fig. 2-4

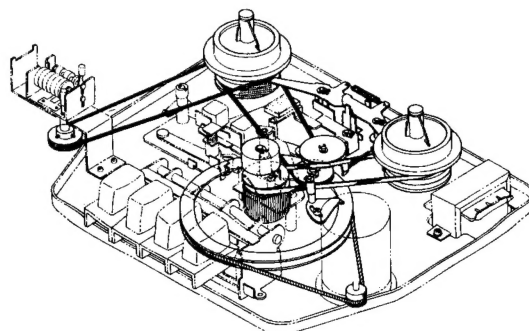
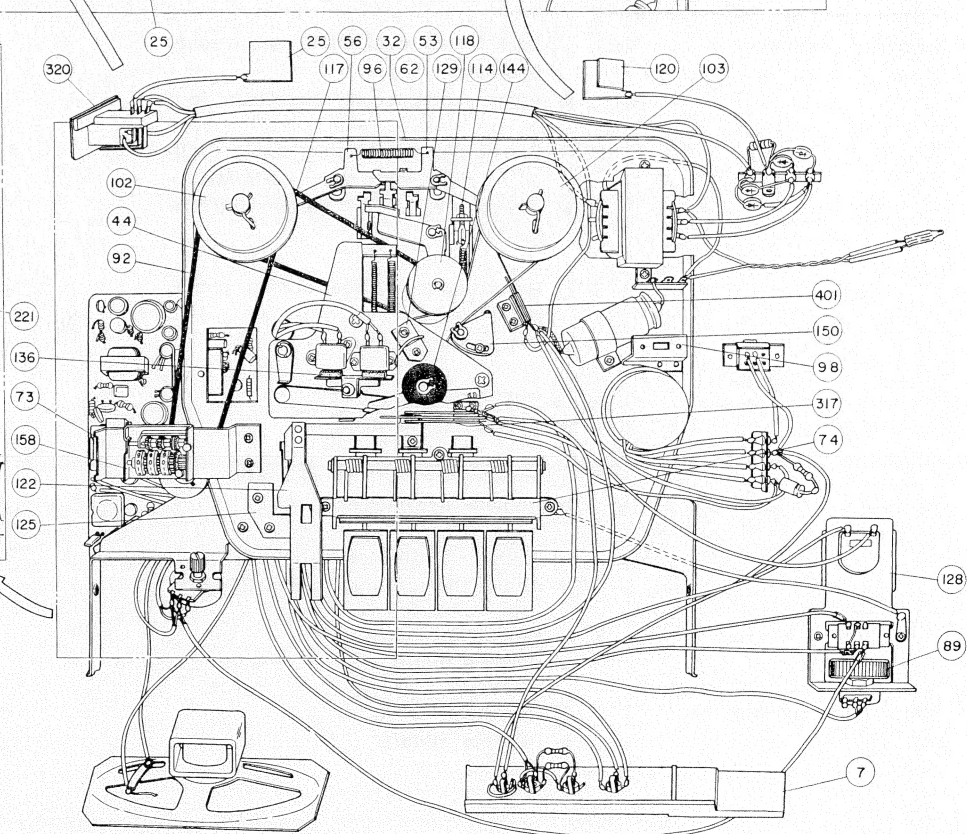
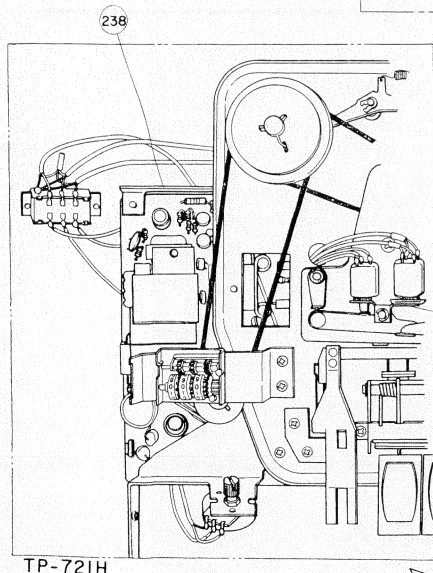
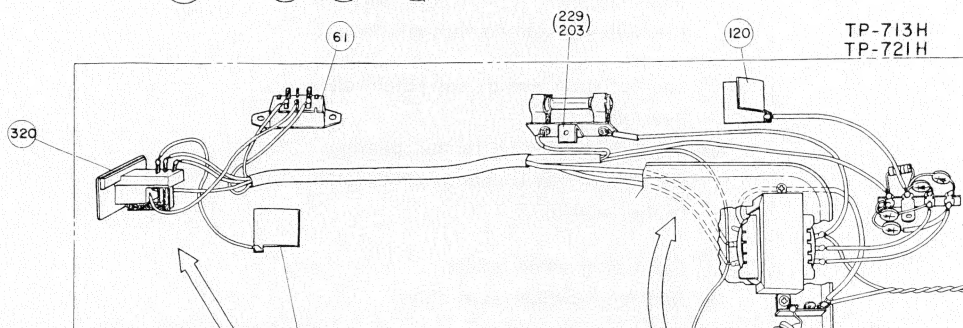
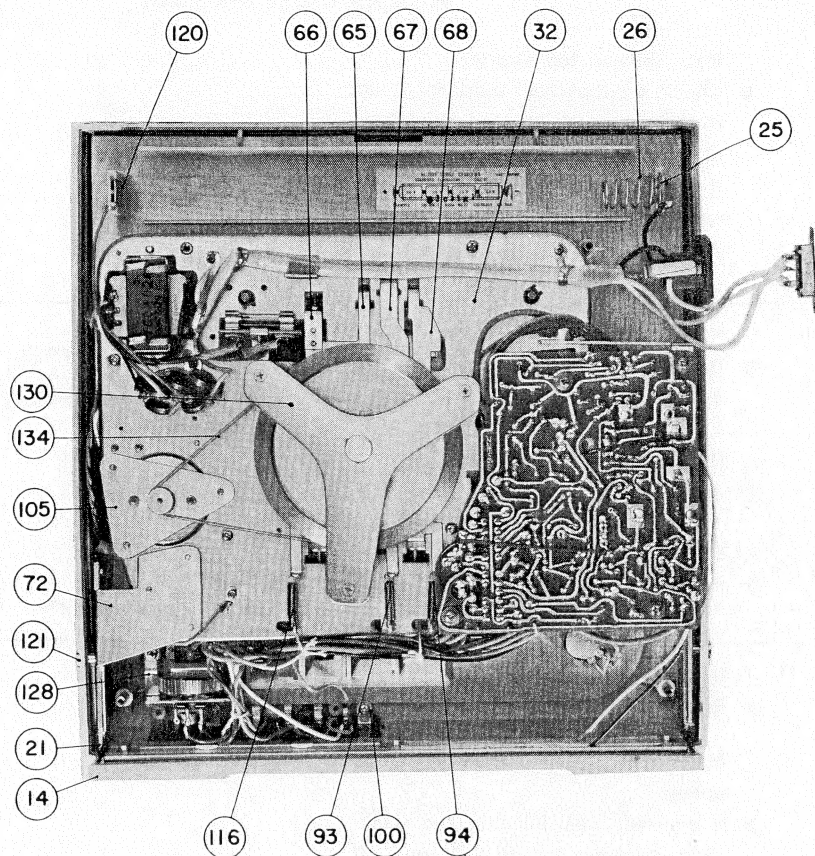


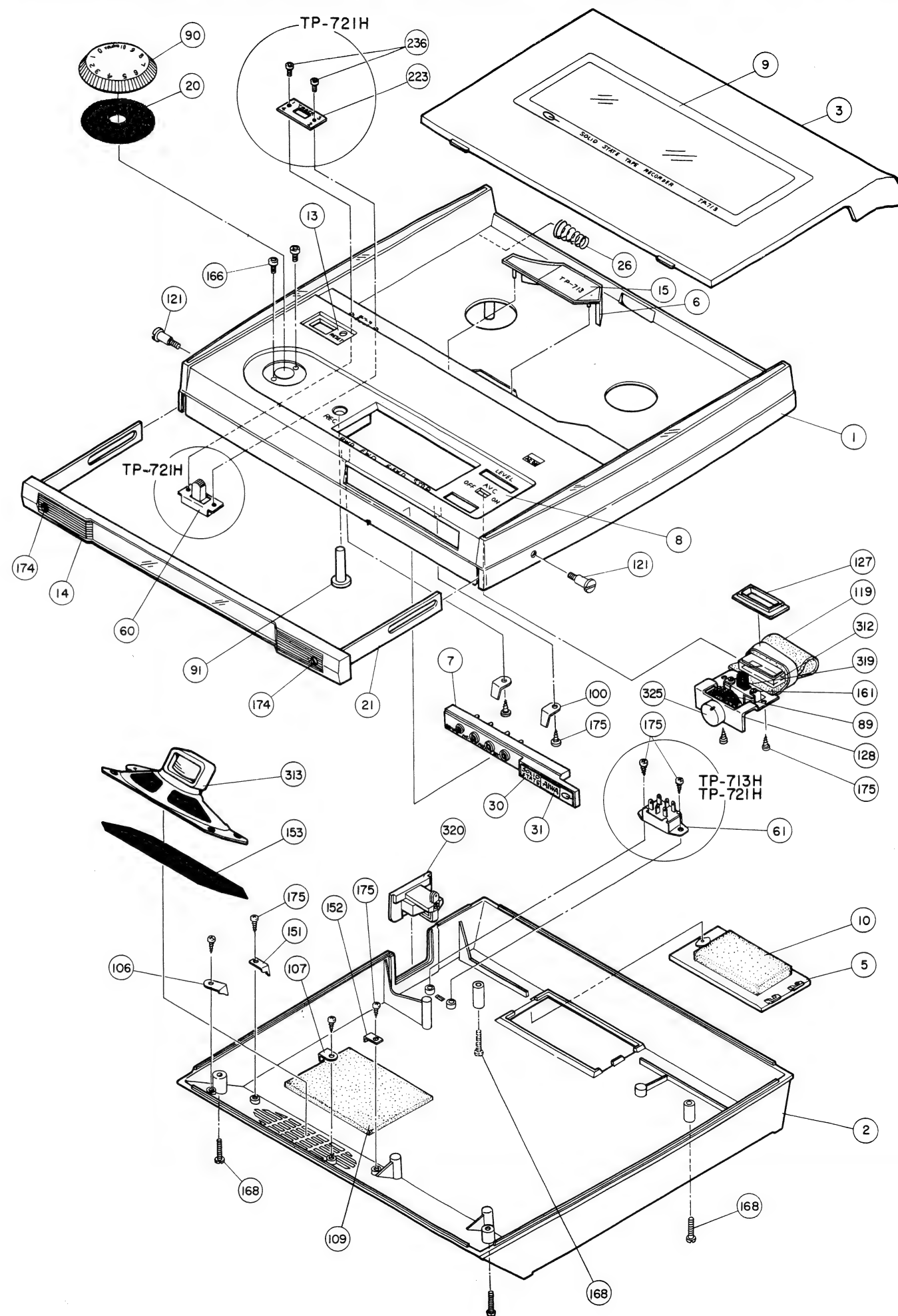
Fig. 2-5

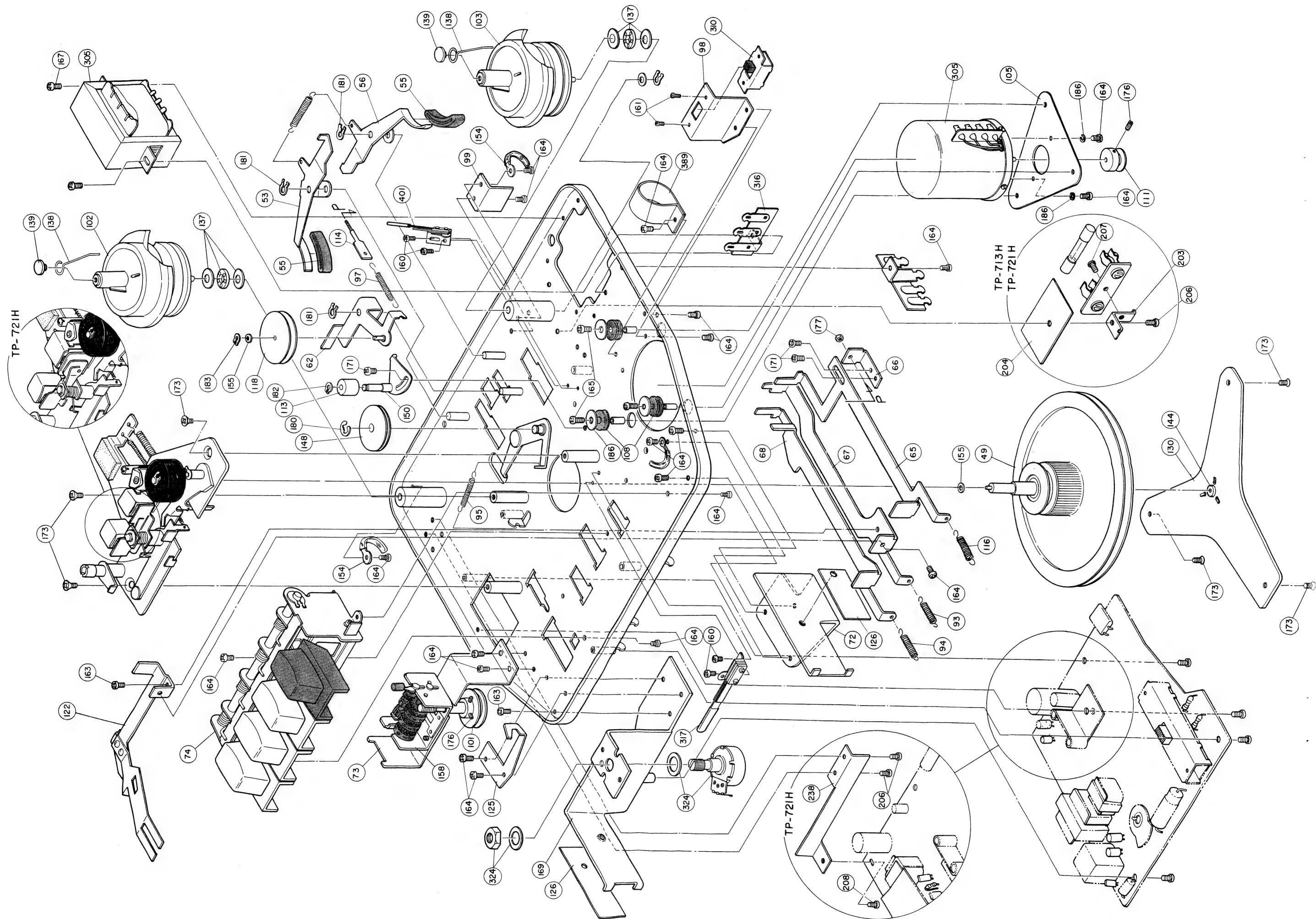
SYMPTOM	Possible Cause & Remedy						
<div>Operates on AC but not on battery</div>	<div><div><div>1.</div><div><div><input type="checkbox"/> Too weak or dead batteries. When pointer of Level Meter comes to stay in the white range on playback, it indicates worn-out batteries.</div><div>▶ Replace batteries.</div></div></div><div><div>2.</div><div><div><input type="checkbox"/> Battery terminal plate not soldered securely.</div><div>▶ Solder it securely.</div></div></div><div><div>3.</div><div><div><input type="checkbox"/> Defective contact of AC input jack. ▶ Ⓒ and Ⓑ come in contact with each other when AC plug is inserted, and Ⓑ and Ⓐ come in contact when pulled off. Should Ⓑ and Ⓐ fail to come in contact as above, the set will not operate on batteries. Bend B and A so that they may come in contact with each other when they should. Or polish their contact points.</div></div></div></div> <div><div><p>The diagram shows a cross-section of the cassette deck's front panel assembly near the tape compartment. It illustrates the electrical contacts for the AC input jack and the battery terminals. Labels include "RECORD", "AIWA", and "BATTERY". Points A, B, and C are indicated by circles at the bottom right, corresponding to specific contact areas mentioned in the text.</p></div><div>Fig. 2-6</div></div> <tr><td><div>In FWD, it forwards tape but fails to take up.</div></td><td><div><div><div><input type="checkbox"/> Insufficient takeup torque. ▶ As shown by Fig. 2-2, adjust the torque to around 35-40gr level by means of adjusting nut. For measurement of the torque, use a tension gauge and measure the torque at hub of 5" or 3" reel.</div></div></div><div><div><p>This figure shows two parts: a small cylindrical component labeled "BB" which is part of the tape transport mechanism, and a circular disc representing a tape reel. A thin wire from a tension gauge is connected between the BB component and the central hub of the reel to facilitate torque measurement.</p></div><div>Fig. 2-7</div></div><tr><td><div>Unstable rewinding (Speed slows down as rewinding approaches tape end)</div></td><td><div><div><div>1.</div><div><div><input type="checkbox"/> Back tension too strong. ▶ Adjust it so that takeup reel platform may turn slightly when the set is turned to RWD position after set-screw or takeup belt adjusting lever is loosened. The torque should be 5gr or less (Measurement is made in the same manner as in case of takeup torque).</div></div></div><div><div>2.</div><div><div><input type="checkbox"/> Abnormal slackening or deterioration of rewind belt. ▶ Replace the belt.</div></div></div><div><div>3.</div><div><div><input type="checkbox"/> Groove of supply reel platform dirty with dust, oil or other alien material. ▶ Wipe it clean.</div></div></div></div><div><div><input type="checkbox"/> Rewind belt out of place or broken. ▶ Mount the belt onto the lower groove of reel platform.</div></div><tr><td><div>(No revolution)</div></td><td></td></tr></td></tr></td></tr>	<div>In FWD, it forwards tape but fails to take up.</div>	<div><div><div><input type="checkbox"/> Insufficient takeup torque. ▶ As shown by Fig. 2-2, adjust the torque to around 35-40gr level by means of adjusting nut. 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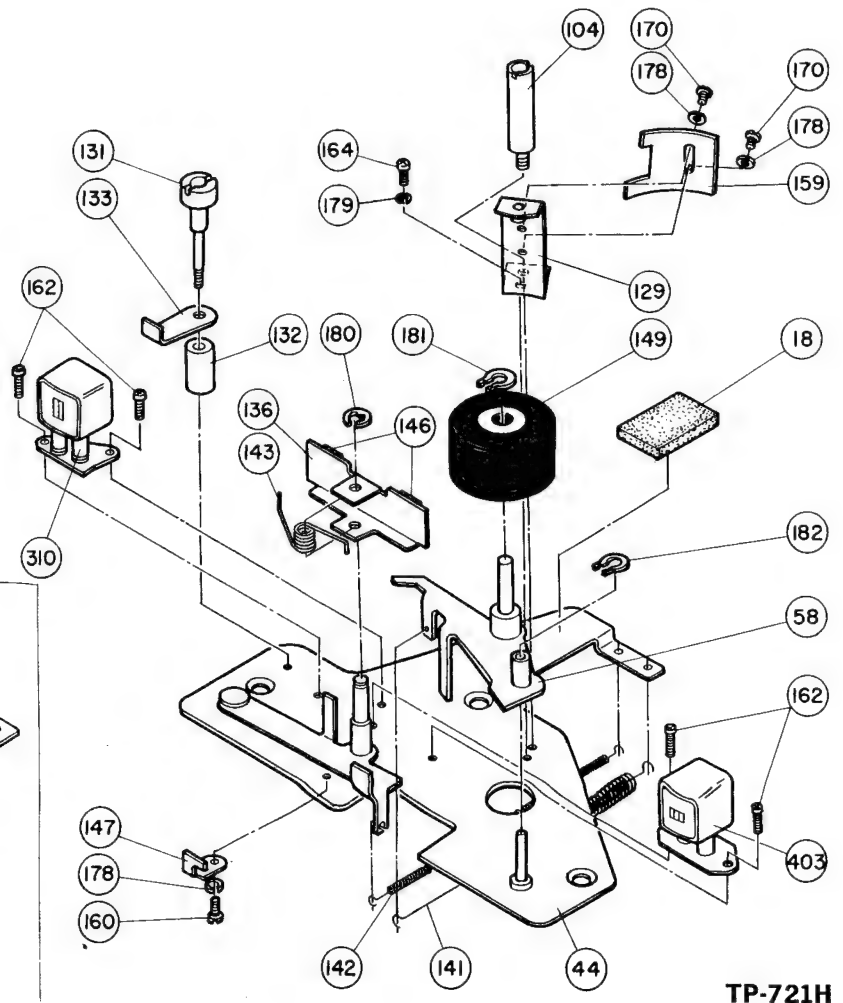
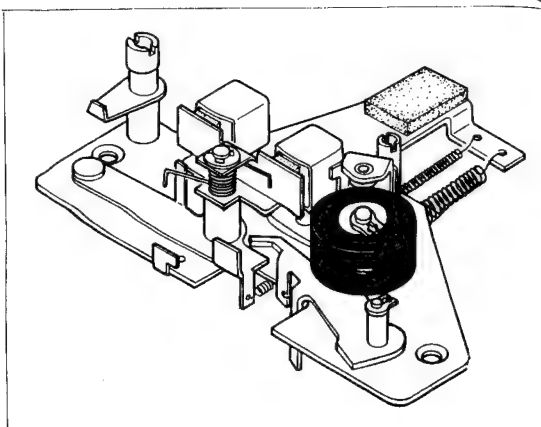
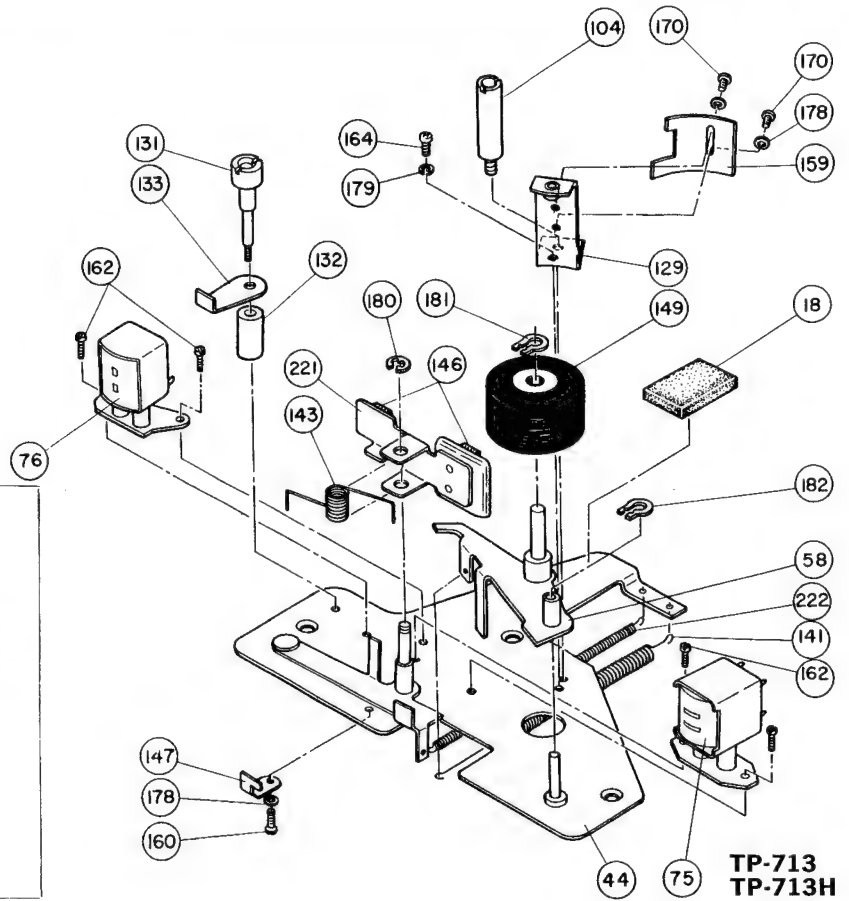
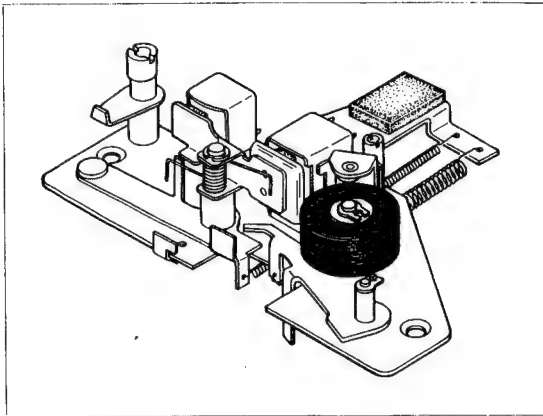
SYMPTOM	POSSIBLE CAUSE & REMEDY
Unstable F. FWD operation	<div> <input type="checkbox"/> Back tension too strong. <div>► Check if supply reel platform is not revolving smoothly. Also check lack of lubricant oil in tape counter shaft and reel shaft. Lubricate the revolving parts.</div> </div>
Brake not working in time Tape speed too fast	<div> <div> <ol style="list-style-type: none"> <input type="checkbox"/> Rubber shoe of brake turn off. <div>► Bond it securely by means of binding agent (synthetic gum phenolic type).</div> <input type="checkbox"/> Brake not working in time. <div>► Adjust it as illustrated here.</div> </div> <div> <input type="checkbox"/> Defective motor. <div>► Replace motor.</div> </div> </div> <div data-bbox="961 501 1439 703"> </div> <div data-bbox="961 775 1044 797"> <p>Fig. 2-9</p> </div> <div data-bbox="1201 748 1481 797"> <p> <input type="checkbox"/> TO INCREASE BRAKE PRESSURE <input type="checkbox"/> TO DECREASE BRAKE PRESSURE </p> </div>
Tape speed too slow	<ol style="list-style-type: none"> <input type="checkbox"/> Defective motor. <div>► Replace motor.</div> <input type="checkbox"/> Main belt abnormally slipping on pulley. <div>► If the belt has become too slackened, replace it with new one. If the pulley is stained with oil, clean it.</div> <input type="checkbox"/> Lack of lubricant oil for pinch-roller bearing. <div>► Apply lubricant oil to the bearing. Be careful not to stain pinch-roller rubber with oil.</div> <input type="checkbox"/> Bend of flywheel shaft. <div>► Replace flywheel assembly.</div>
Irregular revolution Motor noise too big	<ol style="list-style-type: none"> <input type="checkbox"/> Lack of lubricant oil for pinch-roller bearing. <div>► Apply a drop or so of lubricant to it.</div> <input type="checkbox"/> Capstan or pinch-roller stained with oil or dirty with alien materials. <div>► wipe it clean with carbon tetrachloride.</div> <input type="checkbox"/> Deformation or wear-out of pinch-roller rubber. <div>► Replace pinch-roller.</div> <input type="checkbox"/> wear-out of main belt. <div>► Replace the belt.</div> <input type="checkbox"/> Eccentricity of flywheel shaft. <div>► Replace flywheel assembly.</div> <input type="checkbox"/> Take-up torque too strong. <div>► Adjust the torque to about 30-40gr.</div> <input type="checkbox"/> Defective motor. <div>► Replace motor.</div> <input type="checkbox"/> Defective motor. <div>► Replace motor.</div>

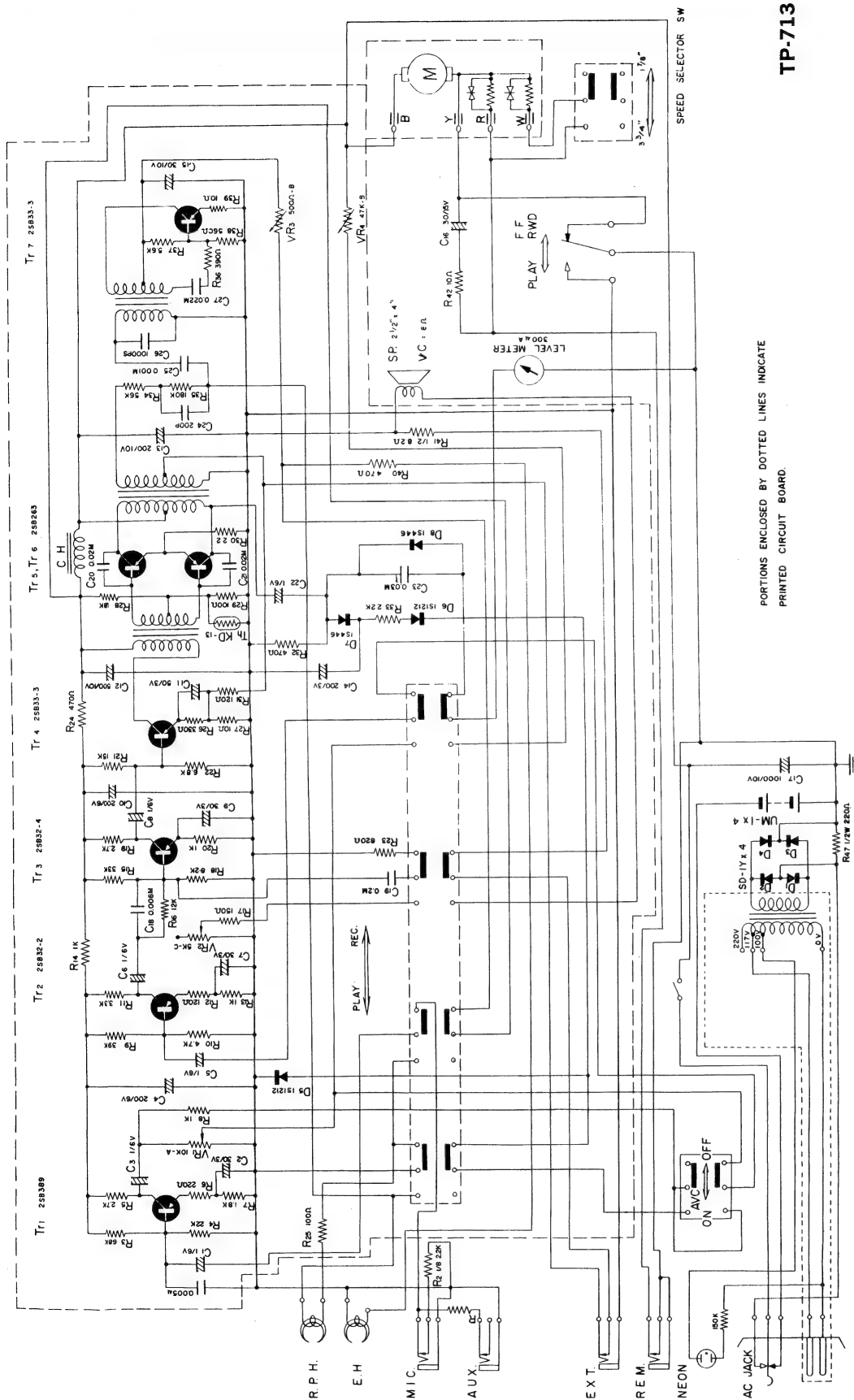






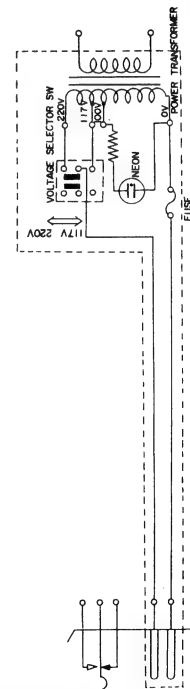




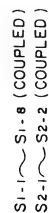


PORTIONS ENCLOSED BY DOTTED LINES INDICATE
PRINTED CIRCUIT BOARD.

TP-713



TP-713H



PORTIONS ENCLOSED BY DOTTED LINES INDICATE PRINTED CIRCUIT BOARD.

MECHANICAL PARTS

TP-713 MECHANICAL PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
1	2246044	Case proper	1	
2	2246053	Back lid	1	
3	2246028	Upper lid, Case	1	
4	2246004	Window	1	
5	2246029	Lid, Battery compartment	1	
6	2246030	Head cover	1	
7	2246025	Jack holder, S	1	
8	2246008	Decorative plate	1	
9	2246048	Name plate	1	
10	2246010	Pressure pad, Battery	1	
11	2246011	Pressure pad, Upper lid	1	
12	2246012	Motor plate	1	
13	2246013	Tape counter plate	1	
14	2246031	Handle grip	1	
15	2246016	Name plate, Head cover	1	
16	2246018	Name plate, Volume knob	1	
17	2246019	Side mole	2	
18	2246020	M (plastic) cushion	1	
19	2246023	Pushbutton key cushion	1	
20	2246042	Felt cushion, Volume knob	1	
21	2246039	Handle	1	
22	2246042	Reinforcement plate, Case proper	1	
23	2201008	Cam, Battery compartment lid	1	
24	2201009	Caulking pin, Btry compartment lid cam	1	
25	2207035	Battery terminal	1	
26	2222036	Battery spring	1	
27	2211246	Name plate, AVC cover	1	
28	7054005	Voltage indication name plate	1	
29	2211024	Glass shield, Pilot lamp	1	
30	1280030	Name plate A	1	
31	1280009	Name plate B	1	
32	2246233	Chassis assembly	1	
33	2246234	Chassis	1	
34	2246103	Pressure lever shaft	1	
35	2246104	Brake lever shaft	2	
36	2246105	Amp. stand A	2	
37	2246106	Stud, Lower shaft bearing	3	
38	2246107	Bushing, Reel platform	2	
39	2246108	Sub-chassis base	3	
40	2246109	Rewinding lever assembly	1	
41	2246110	Rewinding lever	1	
42	2246111	Rewinding pulley shaft	1	
43	2246112	Caulking pin	1	
44	2249113	Sub-chassis assembly	1	
45	2249114	Sub-chassis	1	
46	2211160	Head pad actuating lever	1	
47	2211150	Pinch-roller lever shaft	1	
48	2207200	Caulking pin (Sub 1mm.)	1	
49	2246254	Flywheel assembly	1	
50	2249120	Flywheel	1	
51	2246255	Flywheel pulley	1	
52	2249246	Flywheel shaft	1	
53	2249123	Right brake shoe assembly	1	
54	2246124	Right brake shoe	1	
55	2249125	Brake rubber	2	
56	2246126	Left brake shoe assembly	1	
57	2246127	Left brake shoe	1	
58	2246128	Pinch-roller lever assembly	1	

Ref. No.	Part No.	Description	Quantity	Remarks
59	2246129	Pinch-roller lever	1	
60	2211116	Collar, Pinch-roller lever	1	
61	2211116	Pinch-roller shaft	1	
62	2246251	Take-up lever assembly	1	
63	2246252	Take-up lever	1	
64	2246134	Take-up lever pulley shaft	1	
65	2246135	F. FWD lever A	1	
69	2246136	F. FWD lever B	1	
67	2246137	Main lever	1	
68	2246253	Rewinding lever	1	
69	2246136	Handle fittings assembly A	1	
70	2246140	Handle fittings A	1	
71	2246141	Amp. stand B	1	
72	2246142	Handle fittings B	1	
73	2249144	Tape counter supporter	1	
74	2246230	Pushbutton assembly	1	
75	2249231	Pushbutton key	3	
76	2246242	Pushbutton key	1	
77	2246148	Pushbutton proper	1	
78	2246149	Pushbutton shaft	1	
79	2246150	Pushbutton guide	1	
80	2246151	Pushbutton spring	1	
81	2246152	Stop spring	1	
82	2246153	Pushbutton stopper	1	
83	2246154	Slid plate	1	
84	2246155	Slide spring	1	
85	7442005	Power stop ring, 5φ	2	
86	2246156	Pushbutton lever	4	
87	7261072	Pan-head screw, VO 2.6-5	2	
88	7422305	Spring washer, WS-2.6	2	
89	2246195	Tone control knob	1	
90	2246196	Volume control knob	1	
61	2246236	Record button	1	
62	2246243	Tape counter belt	1	
93	2246163	Main spring	1	
94	2246164	Rewinding spring	1	
95	2249165	Rewinding bar spring	1	
96	2246166	Brake spring	1	
97	2246167	Take-up spring	1	
98	2246169	Motor switch mount	1	
99	2246171	Case support	1	
100	2246250	Metal fittings, Jack holder	2	
101	2246240	Counter pulley	1	
102	2246175	Supply reel platform	1	
103	2246248	Takeup reel platform	1	
104	2246184	Head cover holder	1	
105	2246185	Motor supporter	1	
106	2246186	Speaker metal fittings A	1	
107	2246187	" " " B	1	
108	2246188	Rubber bushing	3	
109	2246198	Amp. Pressure pad	1	
110	2246190	Motor collar	3	
111	2246191	Motor pulley, 2P	1	Normal size 2% gain
112	2246192	Motor pulley, 2A		
113	2246194	Adjustment roller	1	
114	2246201	Adjustment screw	1	
115	2246203	Fibre insulator	2	
116	2249204	F. FWD lever spring	1	
117	2246206	Rewinding belt	1	

Ref. No.	Part No.	Description	Quantity	Remarks
118	2246207	Take-up pulley	1	
119	2246209	Meter cushion	1	
120	2246249	Battery terminal ⊕	1	
121	2249212	Setscrew, Handle	2	
122	2246244	Record switch lever assembly	1	
123	2246246	Record switch lever	1	
124	2246245	Record switch spring	1	
125	2246241	Locking plate	0	
126	2246218	Fibre, Handle	2	
127	2246223	Rubber, Meter	1	
128	2246224	Tone control knob mount'g plate	1	
129	2211115	Upper shaft bearing holder	1	
130	2211121	Lower shaft bearing mount	1	
131	2211152	Tape guide shaft	1	
132	2211153	Tape guide holder	1	
133	2211154	Tape guide mount	1	
134	2211156	Main belt	1	
135	2211157	Take-up belt	1	
136	2211159	Tape pad plate	1	
137	2211161	Thrust bearing	2	
138	2211177	Metal fittings, Reel	2	
139	2211178	Reel platform cap	2	
140	2211201	Head pad	2	
141	2211190	Pinch-roller spring	1	
142	2211191	Head pad spring	1	
143	2211162	Head pad lever spring	1	
144	2209129	Wheel bearing	2	
145	2207220	Thrust plate	1	
146	2207221	Steel ribbon	1	
147	2207169	Head pad actuating lever stopper	1	
148	2207142	Rewinding roller	1	
149	2207137	Pinch-roller	1	
150	2332065	Adjusting lever assembly	1	
151	2219206	Speaker clamp B	1	
152	2219027	Speaker clamp C	1	
153	2219023	Speaker net	1	
154	7038007	Wiring metal binder	3	
155	7081036	Washer, W-2-5-0.2	2	
156	7081043	" W-4-8-0.3	2	
157	7081081	Nylon washer, 4.2-7-0.1	1	
158	7040203	Tape counter	1	
159	2281114	Tape guide plate	1	
160	7263031	Pan-head screw, V⊕2-2S	5	For leaf switch, headpad actuating lever stopper
161	7263032	" V⊕2-3S	4	For motor switch & AVC switch
162	7263034	" V⊕2-5S	4	For record/playback head
163	7263070	" V⊕2-3S	2	For handle fittings A, tape counter supporter & record switch lever
164	72e3071	" V⊕2.6-4S	21	For locking plate, lug plate, motor switch plate, radiation plate, upper shaft bearing, case supporter, pushbutton, motor, handle fittings B & wiring metal binder
165	7263074	" V⊕2.6-8S	3	For motor supporter
166	7263075	" V⊕2.6-10S	7	For Volume knob
167	7263093	" V⊕3-5S	11	For mounting of amp., transformer, tape counter & chassis
168	7263095	" V⊕3-8S	4	For back lid
169	7263073	" V⊕2.6-6S	1	For condenser
170	7253032	Binding screw, U⊕2-3S	2	For tape guide
171	7253070	" U⊕2.6-3S	3	For F. FWD lever & adjusting lever ass'y

Ref. No.	Part No.	Description	Quantity	Remarks
172	7233073	Countersunk screw, Q \oplus 2.6-6S	1	For tone control knob
173	7233094	" Q \oplus 3-6S	6	For lower shaft bearing & sub-chassis
174	7225094	" P \oplus 3-6	2	For handle grip
175	7352094	Tapping screw, VT \oplus 3-6S	8	For Tone control mount, jack holder & speaker
176	7373034	SS-2-5	3	For tape counter pulley & motor pulley
177	7301067	Nut, N-2-45-2.0	1	For adjusting screw
178	7422303	Spring washer, WS-2	3	For tape guide plate & head pad actuating lever stopper
179	7422305	Spring washer, WS-2.6	2	For upper shaft bearing
180	7441010	E stop ring, STE 3.2	2	For rewinding pulley & head pad
181	7442004	Power stop ring, STP4	6	For pressure lever, brake shoe, pinch-roller & reel platform
182	7442003	" STP3	2	For pinch-roller lever & adjusting roller
183	7442002	" STP2	1	For pressure pulley
184	7081018	Fibre washer, WF-4-8-0.5	1	For pinch-roller
185	7081015	" WF-3-8-0.5	3	For amplifier
186	7410411	Washer, W2.6-7.5-0.5	3	For motor supporter
187	7450404	Oval lug plate	2	

TP-713H MECHANICAL PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
TO BE DELETED FROM TP-713 PARTS LIST				
12	2246012	Motor Plate	1	Inch
28	7054005	Voltage indication name plate	1	
2	2246053	Back lid	1	
TO BE ADDED TO TP-713 PARTS LIST				
201	2246033	Motor plate	1	cm
202				
203	2281104	Metal fitting for fuse holder mounting	1	
204	2281105	Fibre insulator A	1	
205	2246054	Back lid	1	
206	7263071	Pan-head screw, V \oplus 2.6-4S	3	For fuse holder, am. supporter
207	7253093	Binding screw, U \oplus 3-5S	1	For fuse holder
208	7363093	Pan-head screw, V \oplus 3-5S	1	For amplifier
209	7352094	Tapping screw, VT3-6S	2	For voltage selector switch
210	7054013	Name plate, AC indicating	1	
211	2281113	" " Voltage selector switch	1	

TP-721H MECHANICAL PARTS

Ref No.	Part No.	Description	Quantity	Remarks
TO BE DELETED FROM TP-713 PARTS LIST				
136	2211159	Tape pad plate	1	
140	2211201	Head pad	2	
142	2211191	Head pad spring	1	
27	2211246	AVC cover name plate	1	
9	2246048	Name plate	1	
15	2246016	Head cover name plate	1	
28	7054005	Voltage indicating name plate	1	
2	2246053	Back lid	1	
12	2246012	Motor plate	1	Inch
TO BE ADDED TO TP-713 PARTS LIST				
221	2281111	Head pad plate assembly	1	
222	2281110	Head pad spring	1	
223	2281003	Track plate	1	
224	2281004	Name plate	1	
225	2281002	Name plate, Head cover	1	
226	7054013	" AC indicating	1	
227	2246054	Back lid	1	
228	2281113	Name plate, Voltage selector switch	1	
229	2281104	Metal fittings, Fuse holder	1	
230	2281105	Fibre insulator A	1	
231	2281102	Shield cover	1	
232	7352094	Tapping screw, VT \oplus 2.6-6S	2	
233	7263070	Pan-head screw, V \oplus 2.6-6S	2	
234	7263071	" V \oplus 2.6-4S	1	
235	7263093	" V \oplus 3-5S	1	
236	7246072	S \oplus 2.6-5S	1	
237	2246033	Motor plate	1	cm.
238	2446211	Amp. supporter	1	

ELECTRICAL PARTS

TP-713 ELECTRICAL PARTS

Ref. No.	Symbol	Part No.	Description	Quantity	Remarks
301		2246601	Printed chassis	1	
302		2246605	Tube kit	1	
303	IPT	7002012	Input power transformer	1	
304	OPT	7002011	Output power transformer	1	
305	PT	7004026	Power transformer	1	
306	CH1	7003012	Choke coil	1	
307	OSC	7007008	Oscillator coil	1	
308		7045017	Motor	1	
309	RPH	7046021	Record/Playback head	1	
310		2246604	Eraser head assembly	1	
311	EH	7046022	Eraser head	1	
312	LM	7040011	Level Meter	1	
313	SP	7048012	Speaker	1	
314		7032001	Jack, 3.5 ϕ	3	
315		7032002	" 2.5 ϕ	1	
316		7033014	Lug plate	1	
317		7031013	Leaf switch B	1	
318		7031060	Slide switch D	1	
319		7031061	AVC switch	2	
320	ACJ	7032163	AC input jack	1	
321		2246606	Radiation plate	1	
322		7097019	Vinyl tape	4cm	
323	NL	2246618	Neon lamp	1	
324	VR1	1451310	Volume control	1	10K-A

Ref. No.	Symbol	Part No.	Description	Quantity	Remarks
325	VR2	7021081	Tone control	1	5K-C
326	VR4	2211322	Semi-fixed resistor	1	47K Ω -B
327	R45	7021070	"	1	500 Ω -B
328	Tr1	8023892	Transistor	1	2SB389
329	Tr2	8020322	"	1	2SB32 (2)
330	Tr3	8020324	"	1	2SB32 (4)
331	Tr7, Tr4	8020333	"	2	2SB33 (3)
332	Tr , Tr6	8022630	"	2	2SB263
333		7026008	Thermister	1	KD-13
334	D7, D8	8052446	Diode	2	1S446
335	D5, D6	7027025	"	2	1S1212
336	D1, D2, D3, D4	7027005	"	4	SD-1Y
337		7033037	Lug plate, 1L3P	1	
338	R1	8122104	Resistor	1	100K Ω
339	R30	8122229	"	1	2.2 Ω
340	R27, R39, R42	8132100	"	3	10 Ω
341	R25, R29	8132101	"	2	100 Ω
342	R12, R31	8132121	"	2	120 Ω
343	R17	8132151	"	1	150 Ω
344	R6	8132221	"	1	220 Ω
345	R26	8132331	"	1	330 Ω
346	R36	8132391	"	1	390 Ω
347	R24, R32, R40	8132471	"	3	470 Ω
348	R38	8182561	"	1	560 Ω
349	R23	8132821	"	1	220 Ω
350	R8, R13, R14, R20	8132102	"	4	1K Ω
351	R7, R28	8132182	"	2	1.8K Ω
352	R23	8132222	"	1	2.2K Ω
353	R5, R19	8132272	"	2	2.7K Ω
354	R11	8132332	"	1	3.3K Ω
355	R10	8132472	"	1	4.7K Ω
356	R37	8132562	"	1	5.8K Ω
357	R22	8132682	"	1	6.5K Ω
358	R18	8132822	"	1	8.2K Ω
359	R16	8132123	"	1	12K Ω
360	R21	8132153	"	1	15K Ω
361	R4	8132223	"	1	22K Ω
362	R15	8132333	"	1	33K Ω
363	R9	8132393	"	1	39K Ω
364	R34	8132563	"	1	56K Ω
365	R3	8132683	"	1	68K Ω
366	R35	8132184	"	1	180K Ω
367	R41	8142829	"	1	8.2 Ω
368	R47	8142221	"	1	220 Ω
369	R2	8119222	"	1	2.2K Ω
370	C1, C3, C5, C8, C23	8432104	Electrotyic capacitor	6	1/ μ F, 6WV
371	C2, C7, C9	8431314	"	3	30/ μ F, 3WV
372	C15	8433314	"	1	30/ μ F, 10VW (Vertical)
373	C16	8435314	"	1	30/ μ F, 15 "
374	C11	8431514	"	1	50 " 3 "
375	C14	8431224	"	1	200 " 3 "
376	C4	8332224	"	1	200 " 6 " (Vertical)
377	C10	8432224	"	1	200 " 6 "
378	C13	8333224	"	1	200 " 10 " (Vertical)
379	C12	8333524	"	1	500 " 10 " (")
380	C25	8727610	Mylar capacitor	1	0.001 μ F, 50V
381	C18	8727730	"	1	0.005 " "
382	C20, C21, C27	8727830	"	3	0.022 " "
383	C23	8727840	"	1	0.033 " "

Ref. No.	Symbol	Part No.	Description	Quantity	Remarks
384	C19	8727930	Mylar capacitor	1	0, 22 μ F, 50V
385	C24	8202470	Ceramic capacitor	1	200pF
386	C26	8619613	Styrol capacitor	1	1000pF, 125WV
387		2246619	Electrolytic capacitor ass'y	1	
388	C17	8433134	Electrolytic capacitor	1	1000 μ F, 10WV (horizontal)
389		7604010	Capacitor mounting band	1	
390		2246607	Single-core shielded wire	1	Grey
391		2246610	"	1	Brown
392		2246611	"	1	Grey
393		2246613	"	1	"
394		2246634	"	1	Brown
395		2246635	"	1	Grey
396		2246614	Two-core shielded wire	1	"
396		2246616	Single-core shielded wire	1	
398		2446617	"	1	
399		2446623	Wire kit table	1	
400		2246624	Two-core shielded wire	1	
401		7031078	Leaf switch L	1	
402		2246625	Wire kit	1	
403		2246627	Record/Plaback head assembly	1	
404		7039510	5" reel with tape	1	
405		7039500	5" reel, Empty	1	
406		7048019	Earphone	1	
407		2211308	Battery	4	
408		0526180	Microphone	1	
410		7034008	AC Power cord	1	For 125V

TP-713H ELECTRICAL PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
TO BE DELETED FROM TR-713 PARTS LIST				
397	2246616	Single-wire vinyl cord kit	1	
398	2246617	"	1	
404	7039510	5" reel w/tape	1	
410	7034008	AC Power cord	1	For 125V
408	0526180	Microphone	1	
320	7032163	AC Input jack	1	
TO BE ADDED TO TP-713 PARTS LIST				
421	7031080	Selector switch	1	
422	7035006	Fuse, 0.5A	1	
423	7033007	Fuse holder	1	
424	2246632	Single-wire vinyl cord kit	1	
425	2246633	Tube kit	1	
426	7039580	Demonstration (pre-recorded) tape with 5" reel	1	
427	7034004	AC Power cord, 250V	1	
428	7032047	Siemens plug	1	
429	7032181	AC Input jack	1	
430	0525486	Microphone	1	

TP-721H ELECTRICAL PARTS

Ref. No.	Symbol	Part No.	Description	Quantity	Remarks
451		2281601	Printed chassis	1	
452		2281901	Circuitry diagram	1	
453	T1	7002038	Input power transformer	1	
454	T2	7002038	Output power transformer	1	
455	CH	7003012	Choke coil	1	
456	T3	7007007	Oscillator coil	1	
457	SP	7048040	Speaker	1	
458	S1-1~1-8	7031060	Slide switch D	1	
459	S4, S3	7031061	" E	2	
460	S2-1, 2-2	7031017	" B	1	
461	S8	7031080	Selector switch	1	
462	S6	7031078	Leaf switch L	1	
463	S5	7031013	" B	1	
464		7033043	Lug plate	1	
465		7033014	"	1	
466	LM	7040011	Level meter	1	
467	M	7045017	Motor	1	
468	T4	7004026	Power transformer	1	
469	ACJ	7032163	AC Input jack	1	
470		2246606	Radiation plate	1	
471	NL	2246618	Neon lamp	1	
472	VR	1451310	Volume control, 10K (A)	1	
473	VR2	7021107	" 20K (B)	1	
474	SFR ₁ , SFR ₁	7021069	SVR	2	
475	RPH	2281604	Record/Playback head ass'y	1	
476	EH	2281605	Eraser head ass'y	1	
477		7450415	Oval lug plate	3	
478	MIC, AUX, EXT	7032001	Jack, 3.5 ϕ	3	
479	REM	7032002	Jack, 2.5 ϕ	1	
480		2281603	Wire kit	1	
481		2281602	Tube kit	1	
482		2281606	Single-wire vinyl cord kit	1	
483		7097019	Vinyl tape	4cm.	
484		7033007	Fuse holder	1	
485		7035006	Fuse, 0.5A	1	
486	Tr1, Tr2	8024390	Transistor	2	
487	Tr3	8020540	"	1	
488	Tr4	8020560	"	1	
489	Tr5, Tr6	8021670	"	2	
490	Tr7	8022630	"	1	
491	Th	8066470	Thermister	1	
492	GD1, GD2	8051060	Germanium diode	2	
493	SD, SD2, SD3, SD4	7027005	Silicon diode	4	
494	SV1, SV2	7027025	Silicon varistor	2	
495		2281634	Shielded wire	1	
496		2281645	"	1	
497		2281636	"	1	
498		2281637	"	1	
499	C3, C5, C6, C7, C9, C11, C31	8332100	Electrotyic capacitor	7	
500	C30	8335100	"	1	
501	C2	8332500	"	1	
502	C12	8332510	"	1	
503	C15	8332120	"	1	
504	C14, C15	8332220	"	2	
505	C20	8333520	"	1	Less than 13 ϕ x19h
506	C16	8333224	"	1	
507	C4	8432110	"	1	
508	C8	8432310	"	1	
509	C28	8435310	"	1	

Ref. No.	Symbol	Part No.	Description	Quantity	Remarks
510	C10	8432220	Chemical capacitor	1	
511		2246619	Electrotytic capacitor ass'y	1	
512	C29	8433134	Electrotytic capacitor	1	
513		7064010	Electrotytic mounting band	1	
514	C26	8619710	Styrol capacitor	1	3900pF, 125WV
515	C23	8205850	Ceramic capacitor	1	0.47 μ \pm 100%, 25WV
516	C25	8224610	"	1	1000pF \pm 20%YY, 250WV
517	C24	8227550	"	1	470pF \pm 10%YW, "
518	C30	8203550	"	1	470pF, SL, 25WV
519	C31	8203490	"	1	240pF, " "
520	C27	8727723	Mylar capacitor	1	4700 μ F \pm 20%
521	C18, C19	8727103	"	2	001 μ F "
522	C27	8717853	"	1	0.047 μ F \pm 10%
523	C1	8727610	"	1	0.001 μ F \pm 20%
524	C13, C33	7015063	Aluminum solid capacitor	2	0.22 μ F \pm 20%
525		2281632	2-core shielded wire	1	
526		2281621	Single-core shielded wire	1	
527		2281622	"	1	
528		2281625	"	1	
529		2281627	"	1	
530		2281629	2-core shielded wire	1	
531		2281630	"	1	
532		2281631	"	1	
533	R24	8132519	Resistor	1	
534	R44, R46	8132100	"	2	
535	R19	8132330	"	1	
536	R31	8132470	"	1	
537	R32	8132820	"	1	
538	R1, R48	3132101	"	2	
539	R23	8132151	"	1	
540	R8, R26, R45	8132221	"	3	
541	R18, R25, R33	8132471	"	3	
542	R9, R14, R43	8132102	"	3	
543	R17	8132152	"	1	
544	R7, R13, R34, R48	8132222	"	4	
545	R6, R12, R22	8132332	"	3	
546	R16	8132472	"	1	
547	R21	8132822	"	1	
548	R5, R42	8132103	"	2	
549	R11	8132153	"	1	
550	R15	8132223	"	1	
551	R41	8132333	"	1	
552	R4	8132563	"	1	
553	R40	8132154	"	1	
554	R10	8132473	"	1	
555	R29	8131109	"	1	
556	R28	8131330	"	1	
557	R27	8131335	"	1	
558	R20	8131102	"	1	
559	R2	8122221	"	1	
560	R3	8122103	"	1	
561	R30	8142829	"	1	
562	R47	8142121	"	1	
563		7039580	5" reel w/pre-recorded tape	1	
564		7039500	5" reel, Empty	1	
565		7048019	Earphone	1	
566		7047001	Battery	4	
567		0525486	Microphone	1	
568		7034004	AC Power cord, 250V	1	
569		7032041	Siemens plug	1	

MISCELLANEOUS PARTS

TP-713 MISCELLANEOUS PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
601	7051103	Printen reel case	2	
602	2246853	Accessory case	1	
603	2246854	Internal carton box	1/3	
604	2246856	Model label	2	
605	7051017	Poly-vinyl sack	1	
606	7051009	Pol-vinyl sack (microphone)	1	
607	7058003	Desiccative (silica gel)	10g	
608	7057004	Battery diagram sheet	1	
609	7057106	Main label	1	
610	2246906	Instructions booklet	1	
611	2246857	Printed indiv. pack'g box	1	
612	2246858	Cushion, Indiv. pack'g box	1	
613	7057174	Voltage selector tag	1	
614	7055029	Mike pouch	1	

TP-713H MISCELLANEOUS PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
620	2246851	Printed indiv. pack'g box	1	
621	2246858	Cushion, Indiv. pack'g box	1	
622	7051103	Reel case for 5" reel	2	
623	2246853	Accessory case	1	
624	2246854	Internal carton box	1/3	
625	7057140	Identification label	2	
626	7051017	Poly-vinyl sack	1	
627	7051009	" (for microphone)	1	
628	7058003	Desiccative (Silica gel)	10g	
629	7057004	Battery Instal. Diagram sheet	1	
630	7057173	Voltage selector tag	1	
631	7057144	Voltage selector label	1	
632	7057193	List of AIWA agents	1	
633	2246905	Instructions booklet	1	
634	7057107	Main label	1	
635	7055029	Microphone pouch	1	

TP-721H MISCELLANEOUS PARTS

Ref. No.	Part No.	Description	Quantity	Remarks
640	2280851	Printed indiv. packing box	1	
641	2246852	Cushion, Indiv. pack'g box	1	
642	7051103	Reel case for 5" reel	2	
643	2246853	Accessory case	1	
644	2246854	Internal carton box	1/3	
645	7057140	Identification label	2	
646	7055004	Microphone pouch	1	
647	7051017	Poly-vinyl sack	1	
648	7051009	" " (for microphone)	1	
649	7058003	Desiccative (Silica gel)	10g	
650	7057004	Battery instal. digram sheet	1	
651	7057173	Voltage selector tag	1	
652	7057159	List of AIWA agents	1	
653	7057144	Voltage selector label (220-240V)	1	
654	2281901	Instructions booklet	1	
655	7057907	Main label	1	